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10/569,554	11/02/2006	David Farrusseng	0512-1324	7749

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Suite 500  
ALEXANDRIA, VA 22314

EXAMINER
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POLYANSKY, ALEXANDER

ART UNIT	PAPER NUMBER
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4181

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01/14/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/569,554

**Applicant(s)**

FARRUSSENG ET AL.

**Examiner**

ALEXANDER POLYANSKY

**Art Unit**

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-45 is/are pending in the application.
- 4a) Of the above claim(s) 38-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-893)  
Paper No(s)/Mail Date 2/27/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election acknowledged***

Applicant's election with traverse of Group I, claims 24-37 in the reply filed on 12/23/08 is acknowledged.

The applicant's arguments are not persuasive since search burden is not a basis for restriction practice of national stage application. As mentioned in the previous office action, restriction requirement or election of species requirement of national stage application should be based on PCT Rule 13.1 where lack of unity exists between inventions in independent claims. : Lack of unity of invention(or species) may be directly evident "a priori," that is, before considering the claims in relation to any prior art, or may only become apparent "a posteriori," that is, after taking the prior art into consideration.

In instant case, the inventions lack unity where lacking unity is apparent after taking the prior art into consideration, since there is a common feature (i.e. a mixed conducting dense membrane of multimetal oxide) between the inventions.

Invention do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the inventions and species lack the same or corresponding special technical features for the following reasons: a review of ("Oxygen permeation study in a tubular  $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$  oxygen permeable membrane," Yang W. et al). makes clear that the inventions of the groups I-V lack the same or corresponding special technical feature because the cited reference(s) appear to

demonstrate that the claimed technical feature does not define a contribution which each of the inventions, considered as a whole, makes over the prior art.

For the reasons mention above, the restriction requirement is proper and maintained as mentioned in previous office action, and made FINAL.

The examination is performed based on election (invention of group I, claims 24-37).

However, applicant is reminded that if the product(elected in instant case) is found to be allowable, the process claims(a process of making said allowable product or a process of use said allowable product can be rejoined as indicated in following paragraph. Therefore, applicant's request will be reconsidered when the product claims are found to be allowable subject matter.

### ***Rejoining practice***

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the

requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

#### ***Examination on Merit***

Claims 24-37 are pending and presented for examination on merit.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 30 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim references back to claim 6, which had been cancelled.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

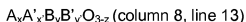
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 24-29, 32, 34, and 36-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. US 6187157.**

With respect to claim 24, Chen teaches the solid oxygen transport membranes (column 9, lines 25) coated with solid electrolyte ion transport powder which is one of Pd, Ag or Pd/Ag alloy (column 6, lines 57-64).

With respect to claim 25, Chen teaches the particle size ranges from about 0.1 to about 0.2 microns (column 7, lines 21-27).

With respect to claims 26 and 27, Chen teaches the ceramic has a perovskite (claim 13) structure with the general formula:



wherein;  $0.1 \leq x < 0.6$ ;  $0.4 < x' \leq 0.9$ ;  $0.1 \leq y \leq 0.9$ ;  $0.1 \leq y' \leq 0.9$ ;  $0.9 < (x+x')/(y+y') < 1.1$ ; and z is determined from stoichiometry, which would render the compound neutral and inherently determine the oxygen deficiency (column 8, lines 13-27). A is a lanthanide element; A' is a suitable lanthanide element dopant; B is selected from the group consisting of titanium, vanadium, chromium, manganese, iron, cobalt, nickel, zinc and mixtures thereof; B' is copper (column 8, lines 15-20).

With respect to claim 28, Chen teaches the A and A' can be La, Sr, Ba, (column 10, table 1), or lanthanide (column 8, line 15).

With respect to claim 29, Chen teaches the B and B' can be chromium, manganese, iron, cobalt, nickel, zinc and copper (columns 10 and 11, table 1 and column 8, lines 15-20).

With respect to claim 32, Chen teaches the sintered oxygen membrane of 1 mm and its performance (figure 4). Chen teaches that various oxygen permeation tests were conducted with membrane discs of 1.1 mm (column 14, line 8).

With respect to claim 34, Chen teaches that the catalytic activity of the second phase can be improved by a ceramic such as magnesia (column 13, lines 9-22).

With respect to claims 36 and 37, Chen teaches the noble metals are Pd, Ag or Pd/Ag alloy (column 6, lines 57-64).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 30-31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. US 6187157.**

With respect to claim 30, Chen does not expressly teach the  $\text{Ba}_x\text{Sr}_{1-x}\text{Co}_{1-y}\text{Fe}_y\text{O}_{3-z}$  composition. However, Chen does teach  $\text{La}_{1-x}\text{Sr}_x\text{Co}_{1-y}\text{Fe}_y\text{O}_{3-z}$  and the stoichiometric amounts are  $0 \leq x \leq 1$ ,  $0 \leq y \leq 1$ ; and therefore, it is the examiner's position that it would be obvious to substitute La in position A for Ba in view of the prior art that teaches the A position in the perovskite can be any one of La, Sr, Ba (column 10, table 1), or lanthanide (column 8, line 15). In re Ruff, 256 F.2d 590, 118 USPQ 340 (CCPA 1958). Additionally, an express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

With respect to claim 31, Chen does not expressly teach the perovskite composition is  $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-z}$ ; however, Chen does teach  $\text{La}_{1-x}\text{Sr}_x\text{Co}_{1-y}\text{Fe}_y\text{O}_{3-z}$  as described in the rejection of claim 30 above and with the disclosed stoichiometric



amounts ( $0 \leq x \leq 1$ ,  $0 \leq y \leq 1$ ) and obvious substitution of Ba for La, as the prior art teaches, it would make for a simple substitution of one known element for another to obtain predictable results and arrive at the instantly claimed perovskite composition.

With respect to claim 33, Chen does not expressly teach the particles represent from 0.01 to 0.1 wt% of the weight of the dense metal; however, Chen teaches the thickness, the diameter, and the perovskite structure as delineated above; and therefore, where the claimed and prior art product(s) are identical or substantially identical, or are produced by identical or substantially identical process(es) the burden of proof is on applicant to establish that the prior art product(s) do not necessarily or inherently possess the characteristics of the instantly claimed product(s), see *In re Best*, 195 USPQ 430. Furthermore, this is obvious because it is the examiners position that the lack of an individual component content of the particle material implies that any and all individual amounts for the components can be used as long as it provides the necessary ion transport aspect absent evidence to the contrary or criticality.

**Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. as applied above in view of Hazbun, E., US 4791079.**

With respect to claim 35, Chen does not teach the particles are based on MgO doped using Vanadium; however, in a process similar to Chen, wherein a two-layer conducting catalytic ceramic membranes are described, Hazbun teaches doping MgO with vanadium (column 2, lines 23-36). At the time of invention it would have been obvious to a person of ordinary skill in the art to perform the process of Chen including adding vanadium in view of the teaching of Hazbun. The suggestion or motivation for

doing so would have been to stabilize ion and electron conductivity. It is noted that the reference teaches vanadia doped materials with preferred compositions; however, after all the substations have been made, it is readily apparent that another embodiment exists with magnesia doped vanadia.

### ***Conclusion***

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER POLYANSKY whose telephone number is (571)270-5904. The examiner can normally be reached on Monday-Friday, 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ALEXANDER POLYANSKY/  
Examiner, Art Unit 4181

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